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Spatial patterns of organic matter content in the surface soil of the salt marshes of the Venice Lagoon (Italy)

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S 1. Preliminary investigation on organic matter variability at the marsh scale – replicates at SF_0 transect

We conducted coring in three replicates at San Felice marsh to observe variability in organic content among the replicates. Along three 30-m-long parallel transects, spaced one meter apart, we collected a total of 18 cores, extending from the marsh edge to the inner area. The spacing between cores within each transect was consistent with the methodology used in the study (0, 2.5, 5, 10, 20, 30 m). Our observations revealed that organic matter (OM) variability along the transects was double that observed between replicates, with the average standard deviation along transects relative to the mean value being about 30%, compared to about 15% between replicates.

Transect	mean	std	%
SF_0_1	0.084	0.039	46.61
SF_0_2	0.057	0.015	26.84
SF_0_3	0.065	0.016	24.81

Table S 1. Preliminary investigation on organic matter variability at the marsh scale – replicates at SF_0 transect. Variability along the transect.

Distance from the edge (m)	mean	std	%
0	0.039	0.004	10.74
2.5	0.056	0.011	20.24
5	0.062	0.007	11.77
10	0.109	0.038	34.91
20	0.084	0.014	16.47
30	0.062	0.001	2.34

Table S 2. Preliminary investigation on organic matter variability at the marsh scale – replicates at SF_0 transect. Variability between replicates at the same distance from the edge.

S 2. Results of the vegetation survey and literature biomass data

Site	*Inula crithmoides*	*Aster tripolium*	*Limonium narbonense*	*Salicornia veneta*	*Sarcocornia fruticosa*	*Spartina maritima*	*Halimione portulacoides*	*Suaeda maritima*	*Puccinellia palustris*	*Juncus maritimus*	*Phragmites australis*	*Triglochin maritima*	*Soil (%)*
SF1			+		3		3						0
SF2			+		4					3			0
SF3					2					4			0
SF4					1					1			0
SF5			1		3					3			0
SF6			3	2									15
CO1	3		+		3								0
CO2	3	+	+		3			1					0
CO3					4		2	2					0
CO4							1	1					0
CO5		+			3			4	+				0
CO6					1		2	+					0
SE1	4				2								20
SE2			2		4				+				10
SE3			2		4								20
SE4			3		2								20
SE5					1								5
SE6			1		1								5
PA1		1									1		15
PA2		1									1		15
PA3		1									1		5
PA4		1									1		5
PA5		1								3	3		0
PA6		1					+			2	4		0
SA1			1		1	1							10
SA2					1				1				0
SA3					1								0
SA4			1		1				1				0
SA5			+	1	2				2				25
SA6			+	1					3				50
CV1	2		1	3				1	2				5
CV2			+		1	1			1				0

Site	*Inula crithmoides*	*Aster tripolium*	*Limonium narbonense*	*Salicornia veneta*	*Sarcocornia fruticosa*	*Spartina maritima*	*Halimione portulacoides*	*Suaeda maritima*	*Puccinellia palustris*	*Juncus maritimus*	*Phragmites australis*	*Triglochin maritima*	*Soil (%)*
CV3			1		4	1			1				0
CV4			4		2	1			1				0
CV5			3	1		1		+		2			25
CV6			3		1				1	2			0
FO1					2			4					0
FO2				2	3			2	+				0
FO3					1	+		1	1				0
FO4			1		4	1		1	1				0
FO5			1	1	3	1			2	1			5
FO6			1	1	2				2				10
MI1			1		2		1			1	2		0
MI2		1	1		2		1			2	1		0
MI3		1	4	1	1					1	1		0
MI4		1	1						1				5
MI5		1	1						1				5
MI6		1	1						1				10
CA1			1		4								20
CA2			4		1	1						1	5
CA3			1		4				1				5
CA4					1				1				0
CA5			4		2								10
CA6			4						1				10
VB1		1	2		1				1	2			25
VB2					2					4			5
VB3			1		2				1	2		1	10
VB4			2		2				1	2			10
VB5		2	1						3	1			10
VB6			1		2				1	3			5

Table S 3. Vegetation survey. Species composition at each studied site following Braun-Blanquet cover-abundance scale (5 = 75-100 %; 4 = 50-75 %; 3 = 25-50 %; 2 = 5-25 %; 1 < 5 % numerous individuals; + < 5 % few individuals).

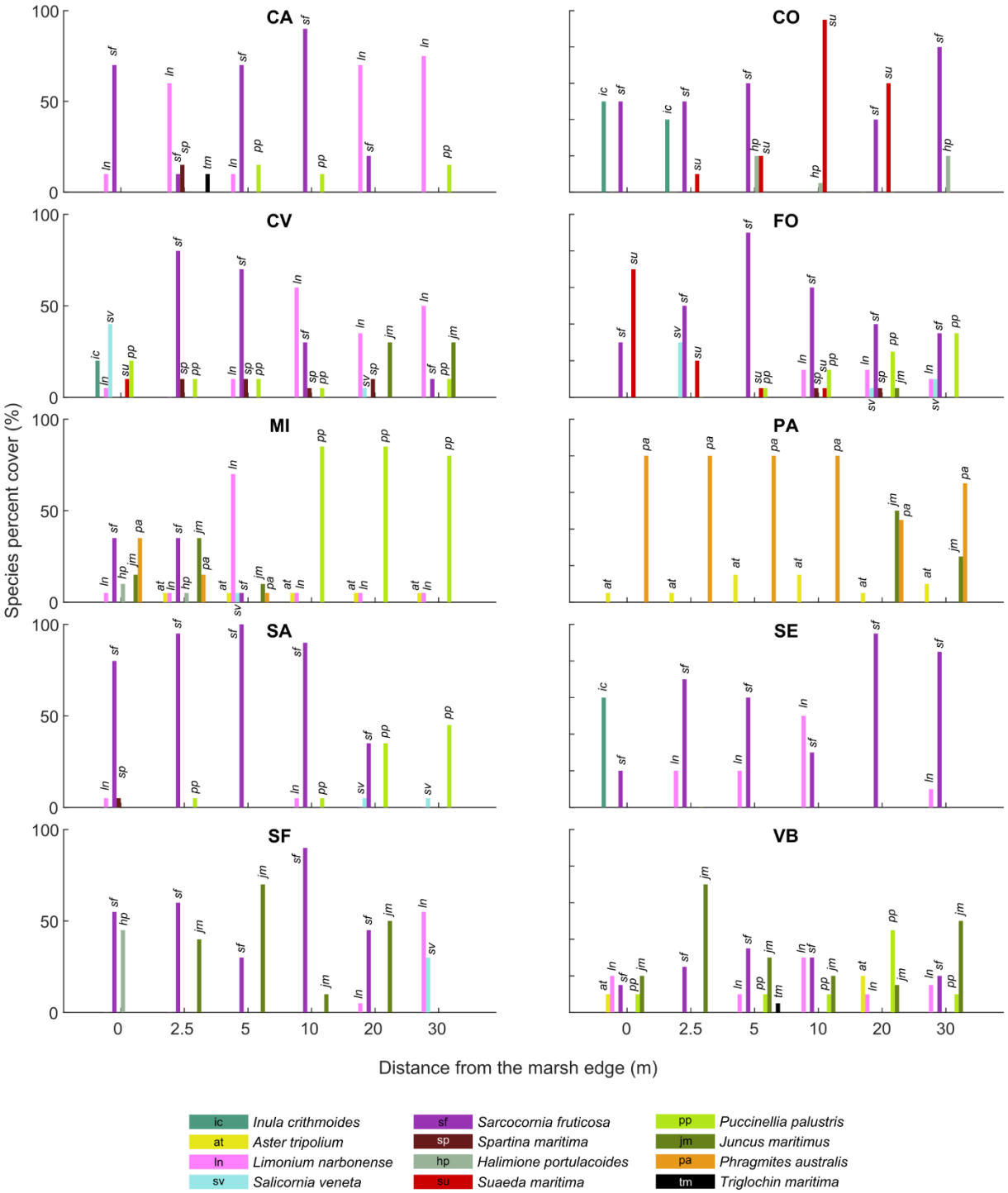

Figure S 1. Species percent cover observed within each 1 x 1 m quadrat surveyed for vegetation characteristics at each study transect.

Species	Aboveground biomass (g m^{-2})	Belowground biomass (g m^{-2})	Source	Notes
Inula crithmoides	366		1	Study for agricultural purposes, Lebanon.
Aster tripolium	545		2	Vegetation data from the Venice lagoon.
Limonium narbonense	276.3		3	Max live plant biomass as dry weight. Vegetation data from the Venice lagoon.
Salicornia veneta	657.7		3	Max live plant biomass as dry weight. Vegetation data from the Venice lagoon.
Sarcocornia fruticosa	1296.7	4314	3, 4	Max live plant biomass as dry weight. Vegetation data from the Venice lagoon.
Spartina maritima	370.7		3	Max live plant biomass as dry weight. Vegetation data from the Venice lagoon.
Halimione portulacoides	1540.7		3	Max live plant biomass as dry weight. Vegetation data from the Venice lagoon.
Suaeda maritima	135.42		5	Frazergaunge and Bali island of Indian Sundarbans.
Puccinellia palustris	372.7		3	Max live plant biomass as dry weight. Vegetation data from the Venice lagoon.
Juncus maritimus	601.3		3	Max live plant biomass as dry weight. Vegetation data from the Venice lagoon.
Phragmites australis	900	5600	2, 4	Max live plant biomass as dry weight. Vegetation data from the Venice lagoon.

Table S 4. Literature data on vegetation biomass (dry weight g m^{-2}) for species found in our study area, primarily focusing on aboveground biomass from studies conducted within or possibly near the Venice Lagoon. Belowground biomass is included where available.1 = Zurayk and Baalbaki (1996); 2 = Ingegnoli and Giglio (2004); 3 = Scarton (2006); 4 = Scarton et al. (2002); 5 = Das et al. (2015).

S 3. Water salinity

Study site	ARPAV station	Mean salinity (PSU)	Standard deviation
CA	PNC1_7B	30.45	2.94
CO	ENC1_3	30.95	2.72
CV	ENC1_4	32.38	2.02
FO	ENC1_VS/PC2_16B	29.81	3.80
MI	PC4_10B	24.6	5.45
PA	PC1_1B/PNC2_2	24.29	1.03
SA SF	EC_Ve8	32.16	2.30
SE	PNC2_SG	31.21	2.40
VB	PC3_VDB	30.57	2.57

Table S 5. Values of water salinity for each study area as the last-6-years mean (2016-2022) of the quarterly measurements from the CTD multiparameter probes of the Veneto Region Environmental Protection Agency (ARPAV).

S 4. References

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